

WHAT IS CLAIMED IS:

1. An optical system for use in scanning a surface, the optical system comprising:

a light source including a broad light emission area comprising point-like light sources arranged in at least one direction;

a group of lenses which condenses a light beam emitted from the light source to a surface to be scanned;

a magnification changer for changing magnification of the group of lenses; and

an aperture provided on an optical path of the light beam and having an opening in which only a portion of the light beam is transmitted therethrough.

2. The optical system of claim 1, wherein the light source is capable of emitting multiple light beams simultaneously, and the aperture is disposed at or in the vicinity of a far-field pattern of the multiple light beams.

3. The optical system of claim 2, wherein the group of lenses comprises one lens group movable along an optical axis direction for changing the magnification, with the aperture disposed downstream of said one lens group relative to the optical path, and area of the aperture opening being constant.

4. The optical system of claim 2, wherein the group of lenses comprises one lens group movable along an optical axis direction for changing the magnification, with the aperture disposed upstream of said one lens group relative to the optical path, and area of the aperture opening changing in

accordance with the magnification.

5. The optical system of claim 1, wherein the group of lenses comprises one lens group movable along an optical axis direction for changing the magnification, with the aperture disposed downstream of said one lens group relative to the optical path, and area of the aperture opening being constant.

6. The optical system of claim 1, wherein the group of lenses comprises one lens group movable along an optical axis direction for changing the magnification, with the aperture disposed upstream of said one lens group relative to the optical path, and area of the aperture opening changing in accordance with the magnification.

7. An optical system for use in scanning a surface, the optical system comprising:

- a light source including a broad light emission area comprising point-like light sources arranged in at least one direction;

- a lens group which condenses a light beam emitted from the light source to a surface to be scanned;

- a magnification changer which moves at least one lens of the lens group along an optical axis direction of the light beam for changing magnification of the lens group; and

- an aperture provided on an optical path of the light beam and including an opening which transmits only a portion of the light beam therethrough.

8. The optical system of claim 7, wherein the light source is capable of emitting multiple light beams simultaneously, and the aperture is

disposed at or in the vicinity of a far-field pattern of the multiple light beams.

9. The optical system of claim 8, wherein the group of lenses comprises one lens group movable along the optical axis direction for changing the magnification, with the aperture disposed downstream of said one lens group relative to the optical path, and area of the aperture opening being constant.

10. The optical system of claim 8, wherein the group of lenses comprises one lens group movable along an optical axis direction for changing the magnification, with the aperture disposed upstream of said one lens group relative to the optical path, and area of the aperture opening changing in accordance with the magnification.

11. The optical system of claim 7, wherein the group of lenses comprises one lens group movable along an optical axis direction for changing the magnification, with the aperture disposed downstream of said one lens group relative to the optical path, and area of the aperture opening being constant.

12. The optical system of claim 7, wherein the group of lenses comprises one lens group movable along the optical axis direction for changing the magnification, with the aperture disposed upstream of said one lens group relative to the optical path, and area of the aperture opening changing in accordance with the magnification.

13. An image recording exposure device for recording an image on an exposure surface by simultaneously carrying out multiple main-scans on the exposure surface, the device comprising:

point-like light sources arranged in a row in a sub-scanning direction and capable emitting multiple light beams simultaneously;

exposure lenses including multiple lenses for focusing light beams emitted from the light sources onto the exposure surface along an optical path, at least two exposure lenses being disposed at positions different from one another on the optical path;

a magnification changer for changing magnification of the exposure lenses; and

an aperture disposed between said positions at or in the vicinity position at which a far-field pattern is formed by the emitted light beams, the aperture having an opening of constant area which transmits only a portion of luminous flux of the light beams therethrough, wherein the exposure lenses include lenses for changing the magnification disposed between the aperture and the light sources.

14. The image recording exposure device of claim 13, wherein the aperture is maintained at a substantially constant distance from the light sources.

15. The image recording exposure device of claim 13, wherein the aperture is maintained at a substantially constant distance from the exposure surface.

16. The image recording exposure device of 13, wherein the opening of the aperture is non-circular.

17. An image recording exposure device for recording an image on an exposure surface by simultaneously carrying out multiple main-scans on the exposure surface, the device comprising:

point-like light sources arranged in a row in a sub-scanning direction and capable emitting multiple light beams simultaneously;

exposure lenses including multiple lenses for focusing light beams emitted from the light sources onto the exposure surface along an optical path, the exposure lenses including at least two lenses disposed at positions different from one another on the optical path;

a magnification changer for changing magnification of the exposure lenses; and

an aperture disposed between said positions at or in the vicinity position at which a far-field pattern is formed by the emitted light beams, the aperture having an opening which transmits only a portion of luminous flux of the light beams therethrough, and

an opening area changer which changes area of said opening of the aperture in accordance with magnification, wherein the exposure lenses include lenses for changing the magnification disposed between the aperture and the exposure surface.

18. The image recording exposure device of claim 17, wherein the opening area changer comprises a mechanism which is mechanically linked with the magnification changer.

19. The image recording exposure device of claim 17 wherein the aperture is maintained at a substantially constant distant from the light sources.

20. The image recording exposure device of claim 17, wherein the aperture is maintained at a substantially constant distance from the exposure surface.